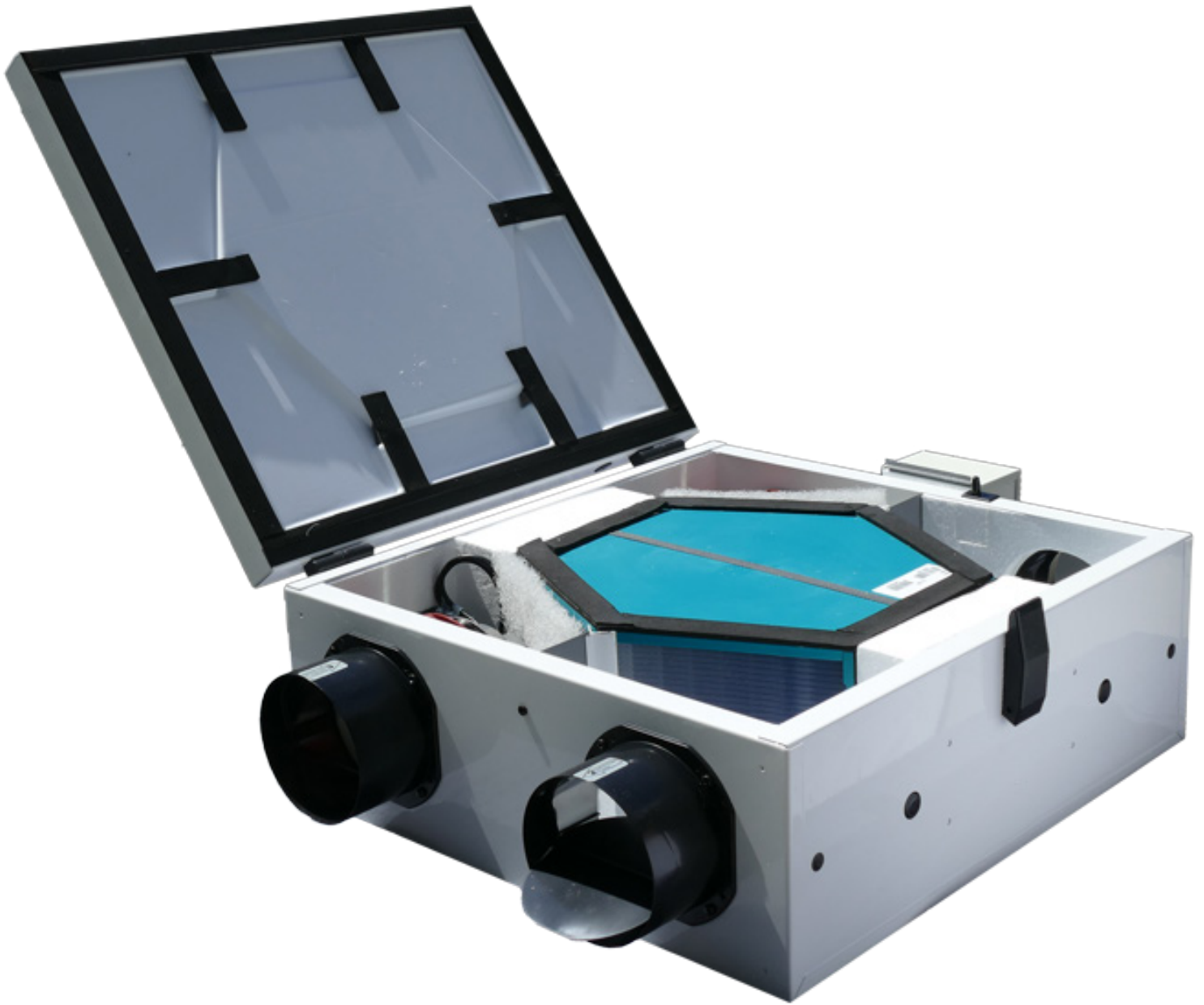


O X Y G E N 8

**INSTALLATION  
& OPERATION  
MANUAL  
VITA ERV**



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# 1.0 Safety Instructions

## READ AND SAVE THESE INSTRUCTIONS



### Warning

To reduce the risk of fire, electric shock or injury, observe the following:

1. Read all instructions carefully before installations, operation or maintenance of the unit. Failure to comply with instructions could result in personal injury and/or property damage.
2. Installation of the unit and the corresponding electrical wiring must be done by a qualified person and be in accordance with all municipal and national electrical codes and pertinent industry standards should be verified before installation.
3. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer.
4. Moving parts: disconnect power supply before opening, ensure all nuts and screws are securely fastened before restarting the unit.
5. Before servicing or cleaning the unit, switch power off at the service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
6. When cutting or drilling into a wall or ceiling, make sure that you do not damage electrical wiring and other hidden utilities.
7. To reduce the risk of fire, use only metal ductwork. Do not use any accessories not recommended by the manufacturer.
8. When performing installation, servicing or cleaning of the unit, it is suggested to wear safety glasses and gloves.
9. Do not use this unit for commercial purposes.
10. For residential use only. The unit must be grounded.
11. Do not install in a cooking area.
12. This unit is not designed to exhaust combustion and/or dilution air for fuel burning appliances.

### Packaging Inspection

Open the box and check to make sure all of the parts and accessories are present and in good condition. If you find any parts missing or any shipping damage, please contact our factory or distributor immediately.



### Caution

1. Turn the unit OFF during construction or repair to avoid filter blockage.
2. Exhaust air outside - Do not intake/exhaust air into spaces within walls, crawl spaces, garage or into attics.
3. The unit must be installed in accordance to National and Local Building Codes.
4. When leaving the house for a long period of time (more than two weeks), a responsible person should check if the unit operates adequately.
5. Published efficiencies are based on balanced air-flows on supply and exhaust.

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- Horizontal/Vertical
- Single Vent & Access Door Installation
- Drain Connection

### Air Flow Balancing

- Balancing Procedure
- Pitot Tube Air Flow Balancing

### Maintenance

- Regular Maintenance
- Annual Maintenance

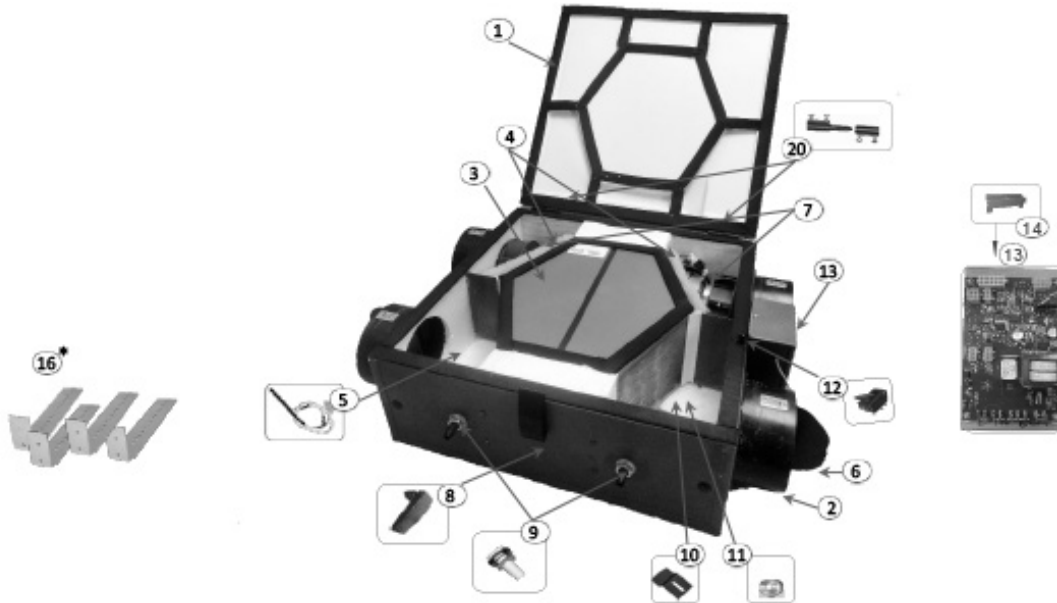
### Troubleshooting

### Climate Zone

### Notes

## 2.0 Components

### 2.1 Vita 120 Polypropylene Core



| Reference | Description                          | Part Number | RERV-C100 NF |
|-----------|--------------------------------------|-------------|--------------|
|           |                                      |             | Qty.         |
| 1         | ERV - lid, Pan Assembly              | 9315        | 1            |
| 2         | Polypropylene Collar 5" Dia.         | 014043C     | 2            |
| 3         | Counterflow Plastic Core             | CF100       | 1            |
| 4         | Filter 7" x 12" (MERV-8 and MERV-13) | 9358        | 2            |
| 5         | Temperature Sensor                   | 9326        | 1            |
| 6         | 5" Polypropylene Backdraft Damper    | 014043      | 2            |
| 7         | ECM Motors                           | 9319        | 2            |
| 8         | Adjustable Door Latch                | 9319        | 1            |
| 9         | Drain Spout Assembly                 | 9320        | 2            |
| 10        | Core Locking Bracket                 | 9321        | 1            |
| 11        | Core Locking Nut                     | 014016      | 1            |
| 12        | Safety Switch                        | 9322        | 1            |
| 13        | Main Control Board                   | 9361        | 1            |
| 14        | Main Control Board Bracket           | 9355        | 2            |
| 15        | Door Hinges                          | 9328        | 1 Set        |
| 16*       | Mounting Brackets                    | 01135       | 4            |

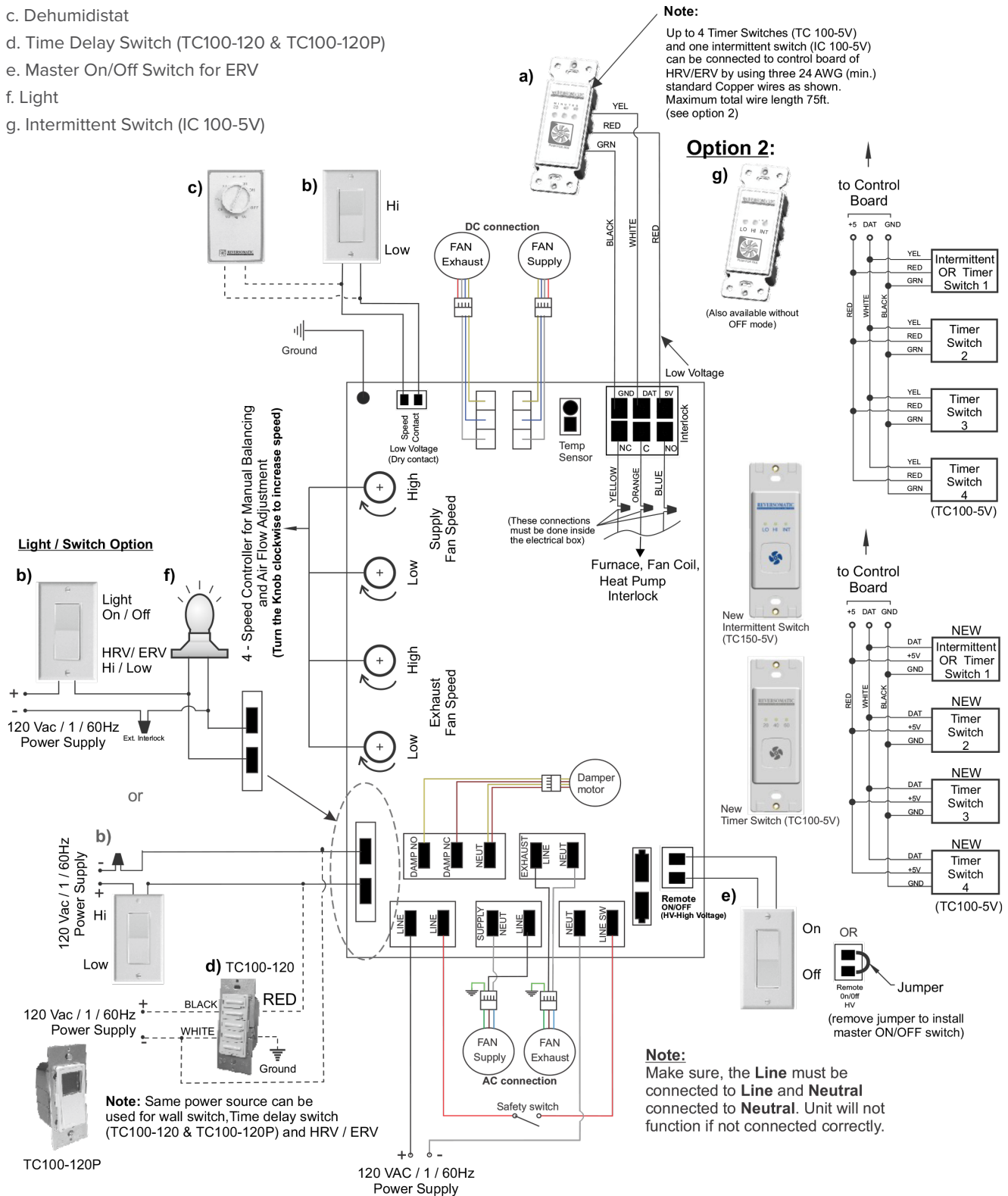
**Note** Units come standard with a plug-in style connection, but may be ordered with direct connections.

# 3.0 Wiring Diagrams

## 3.1 Standard Control Board

Optional Accessories

- Timer Switch (TC100)
- Wall Switch
- Dehumidistat
- Time Delay Switch (TC100-120 & TC100-120P)
- Master On/Off Switch for ERV
- Light
- Intermittent Switch (IC 100-5V)

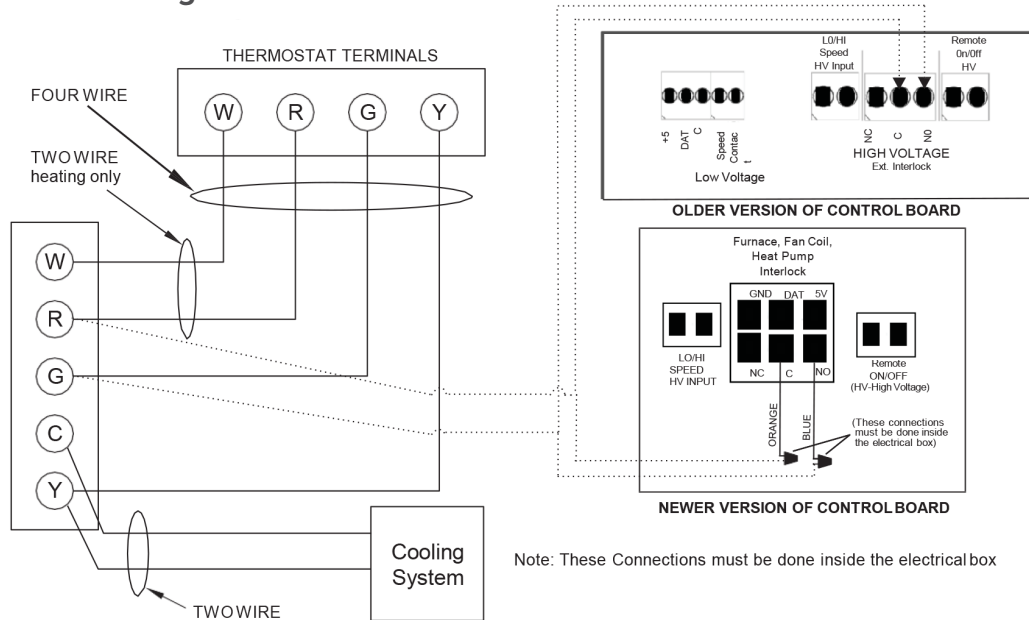


## 3.2 Wiring Diagram: Furnace / Fan Coil / Heat Pump Interlock



**Warning:** Never connect a 120V AC circuit to the terminals of the furnace/fan-coil/heat pump interlock (Standard Wiring). Only use the low voltage class 2 circuit.

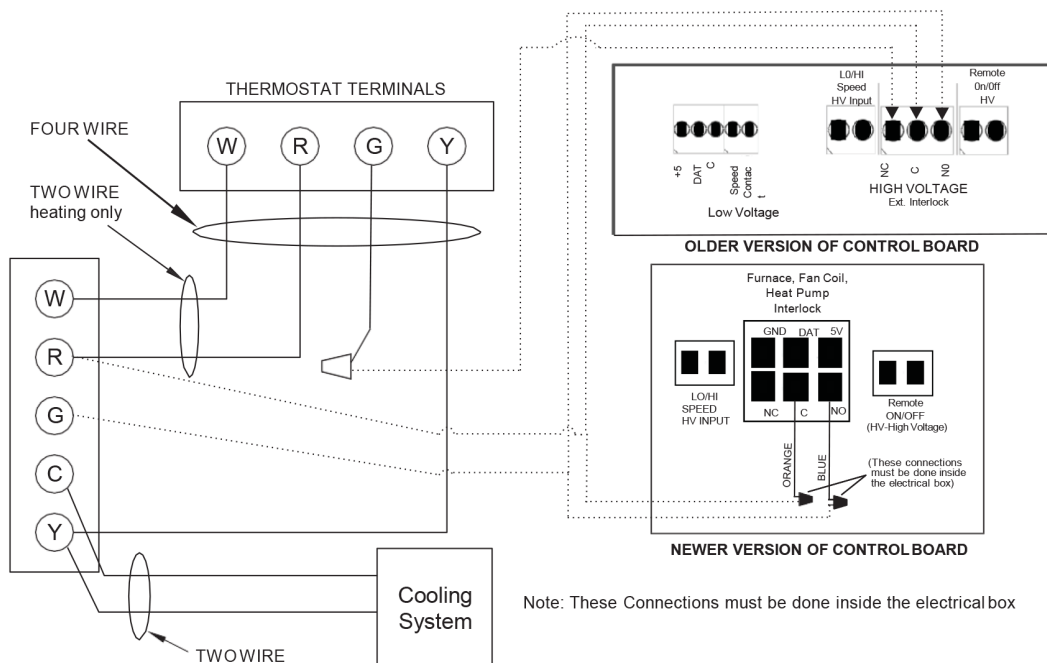
### Standard Interlock Wiring



### For a furnace connected to a cooling system

On some older thermostats, energizing the R and G terminals at the furnace has the effect of energizing Y at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the "Alternate Interlock Wiring".

### Alternate Interlock Wiring

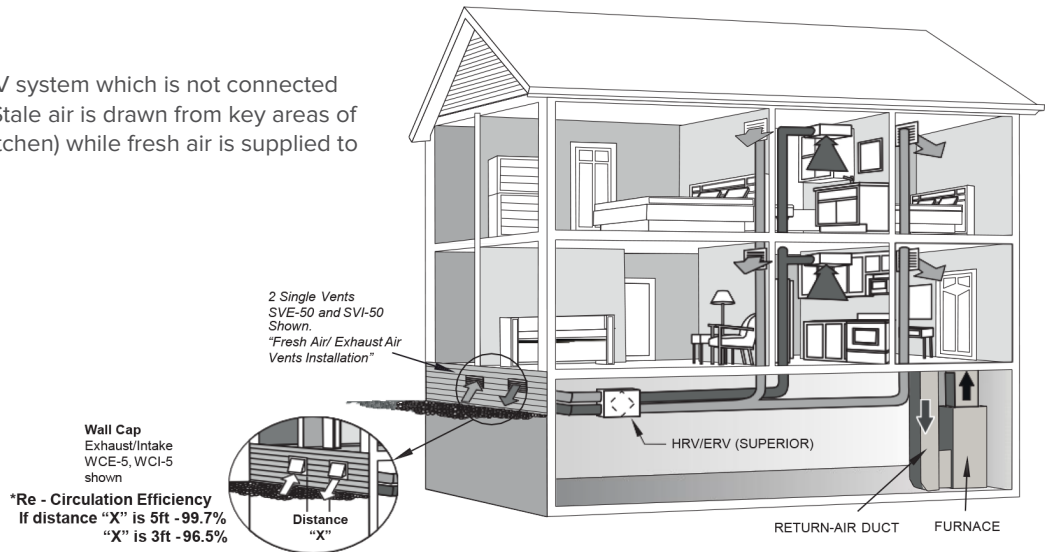
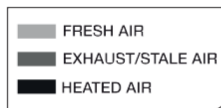


## 4.0 ERV Typical Installations

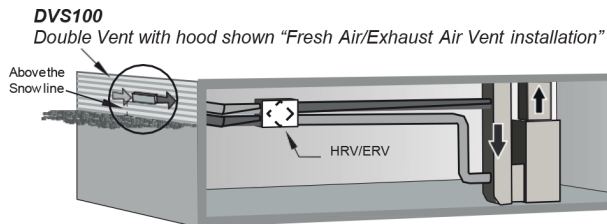
### 4.1 Typical Installations for a House

#### Fully Ducted System

This is a standalone ERV system which is not connected to a forced air system. Stale air is drawn from key areas of the home (bathroom, kitchen) while fresh air is supplied to main living areas.

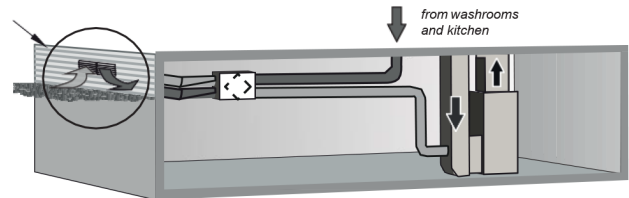


#### Furnace Return Air-Duct Connection



#### Semi Ducted System

Double vent with extruded aluminum grille  
DVG200 shown "Fresh Air/Exhaust Air Vent installation"



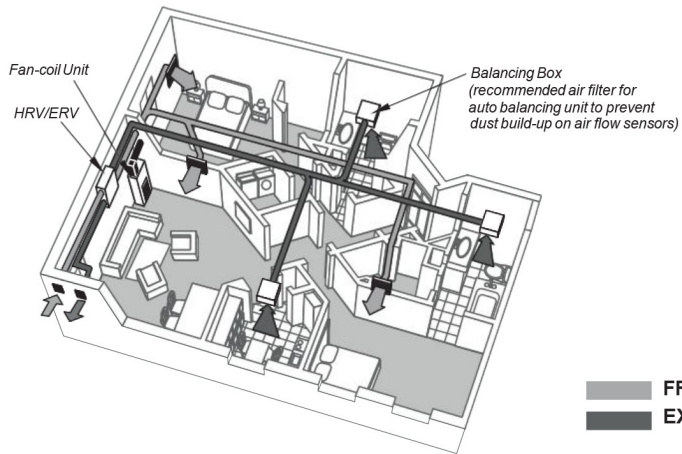
#### Note

It is recommended that the furnace blower run continuously or the ERV operation be interlocked with the furnace blower to evenly distribute the fresh air throughout the house.

A backdraft damper is required in the exhaust air duct to prevent outdoor air from entering the unit when the Furnace / Air Handler is running and the unit is in Standby, OFF or in Recirculation.

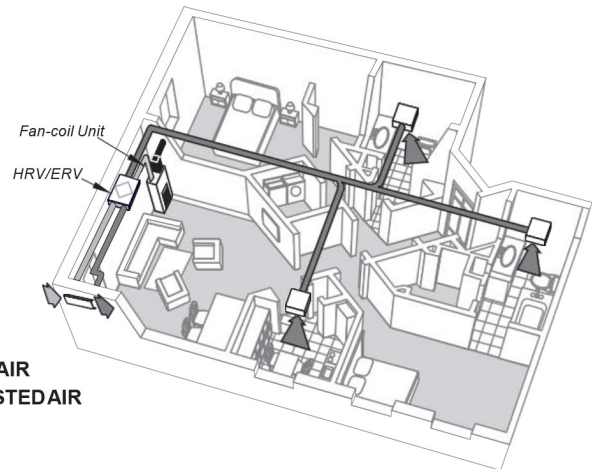
## 4.2 Installation Options for a High-Rise Condominium

### Fully Ducted System



### With Fan Coil System

Fresh air from outside should be installed on the Fan-Coil return side (ERV station #2) and the ERV should be interlocked with the Fan-Coil unit.



### Note

All exhaust fans must be installed minimum of 5 ft. away from sidewalls.

All ERVs must be balanced in the field.

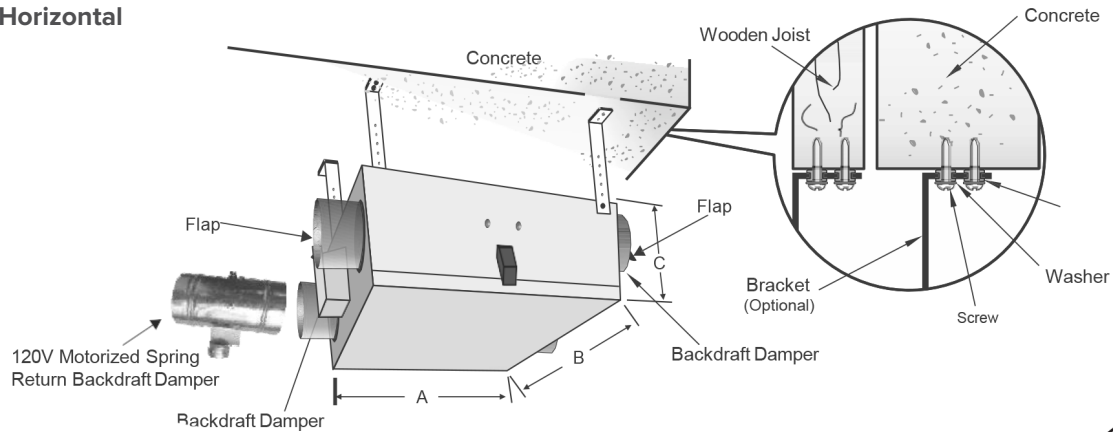
## 4.3 Horizontal and Vertical Installations

32" clearance is recommended for cleaning of the core and servicing the unit (use appropriate door size).

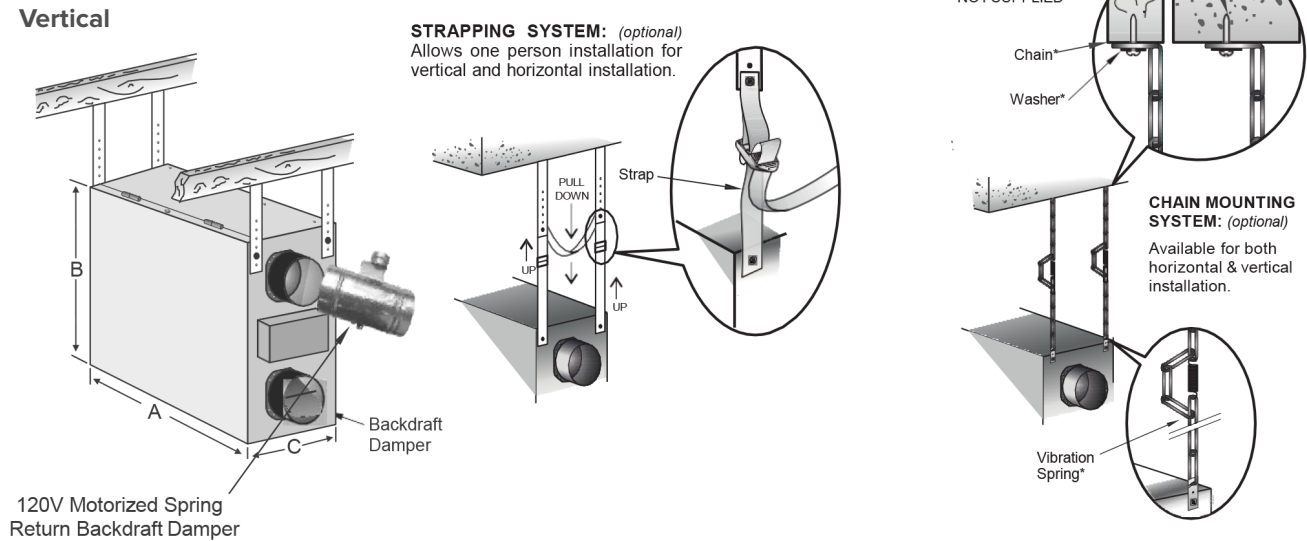
Dampers are installed for horizontal installation. For vertical installation, both dampers must be turned so they can open and close properly when there is any backdraft.

**Make sure no screw will interfere the function of the backdraft damper flaps while installing the duct work to the ERV.**

### Horizontal



### Vertical



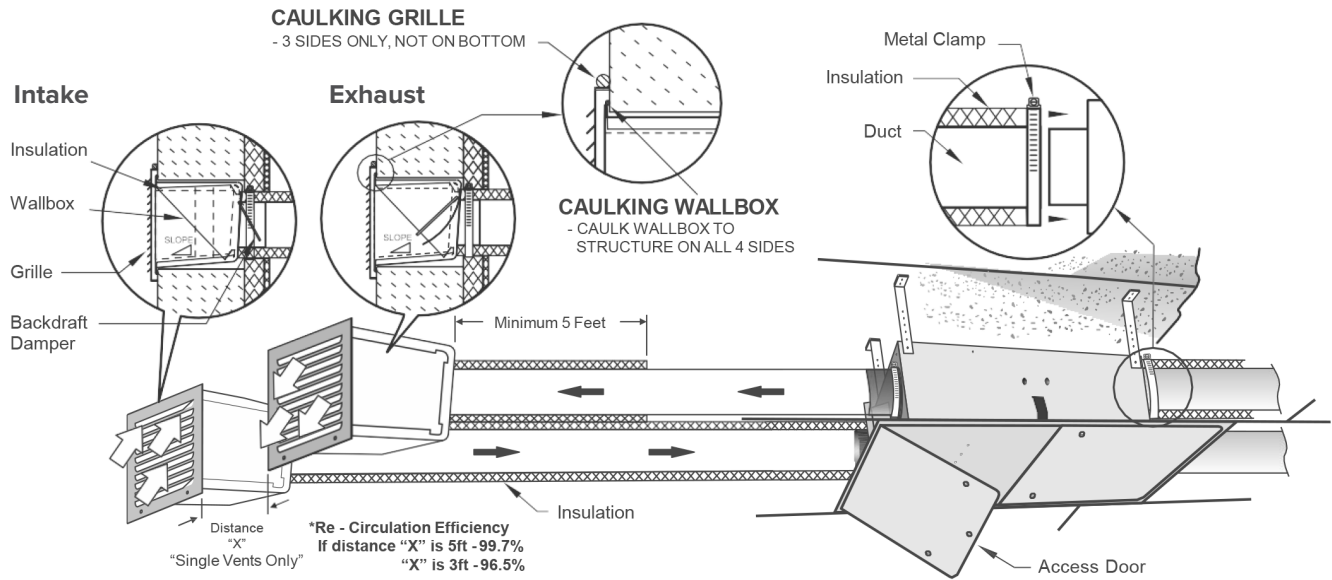
| Model #      | A   | B   | C     |
|--------------|-----|-----|-------|
| Vita 120 ERV | 22" | 21" | 9.25" |

### Note

After installation, make sure the ERV is properly leveled. If not leveled correctly, then defrost will not perform effectively and/or the unit may frost in winter.

Also make sure you have proper defrost on the wall - controller according to ERV model no. / core type.

## 4.4 Typical Installations of Single Vents and Access Door



### Notes

Fresh air intake and supply duct must be totally insulated. The Exhaust duct must be 5' insulated from the wall. In colder climates, it is recommended to insulate all exhaust and supply ducts. Check building codes for insulation requirements.

Use appropriate access door sizes and install on the correct location for easy access to all ERV components for routine check and maintenance of the unit.

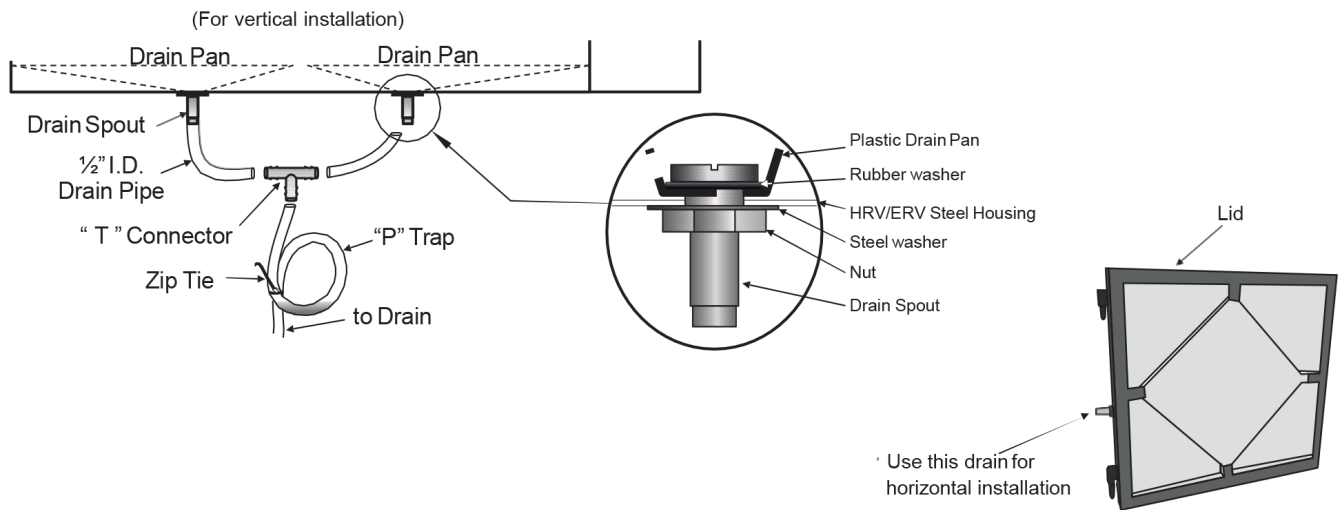
## 4.5 Drain Connection

During the defrost cycle, the ERV unit may produce some condensation and the water should flow into a nearby drain.

The ERV cabinet has pre-punched holes (two on the side and one on the door) for the drain, in order to keep the drain pan intact, hand tighten the plastic drain spout to the unit using the gasket and nuts.

### For Vertical Installation

Cut two sections of 1/2" drain pipe and connect the other ends to the drain spout, then connect to a "T" connector. Connect a drain line and create a P-Trap to prevent the unit from unpleasant odors from the drain source. Tape or fasten the base to avoid any bends.



### Notes

For horizontal installation, connect only 1 drain spout assembly on lid/door. Cut one 1/2" drain pipe and connect one end to the drain spout and the other end to the drain line. Don't forget to make a P-trap (shown above).

The ERV must be connected to the drain.

## 5.0 Air Flow Balancing

### 5.1 Balancing Procedure

It is required to have balanced airflows in an ERV. The volume of air brought in from the outside must equal the volume of air exhausted by the unit while running at a normal speed. If the airflows are not properly balanced, then:

The ERV may not function at its maximum efficiency.

A negative or positive air pressure may occur in the house or condo.

The unit may not defrost properly.

**Prior to balancing, ensure that:**

1. All of the ERV components are in place and functioning properly.
2. All sealing of the ductwork system has been completed.
3. Set the unit to normal speed.
4. Airflows in branch to specific areas of the house should be adjusted first prior to balancing the unit.
5. After taking a reading of both the stale air to the ERV duct and fresh air to the house duct, the duct with the lower CFM reading should be left alone while the duct with the higher airflow should be slowed down to match the lower reading by adjusting the dial/speed controller on the control board.
6. Return the unit to the appropriate fan speed for normal operation.

### 5.2 Pitot Tube Airflow Balancing

The following is a method of field balancing an ERV using a Pitot tube in situations when flow stations are not installed in the ductwork. This procedure should be performed with the ERV on normal speed.

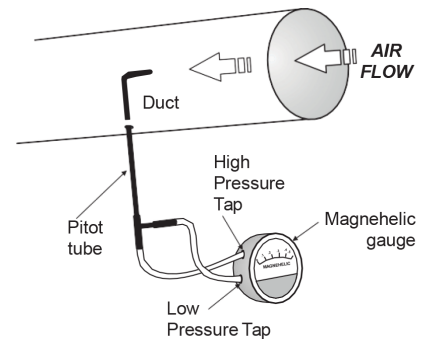
The first step is to operate all mechanical systems on the most desired speed, which will have an influence on the ventilation system, i.e. the forced air furnace or air handler is applicable. This will provide the maximum pressure that the ERV will need to overcome, and allow for a more accurate balancing of the unit.

Drill a small hole in the duct (about 3/16"), three feet downstream of any elbows or bends, and one foot upstream of any elbows or bends. These are recommended distances but the actual installation may limit the amount of straight duct.

The Pitot tube should be connected to a magnehelic gauge capable of reading from 0 to 0.25 in. (0-62 Pa) or other digital airflow meter. The tube coming out of the top of the pitot is connected to the high-pressure side of the gauge/meter and the tube coming out of the side of the pitot is connected to the low pressure or reference side of the gauge/meter.

Insert the Pitot tube into the duct, pointing the tip into the airflow. For general balancing, it is sufficient to move the pitot tube around in the duct and take an average or typical reading. Repeat this procedure in the other duct. Determine which duct has the highest airflow (highest reading on the gauge), then slow down that motor speed by adjusting the dial/speed controller on the control board to match the lower reading from the other duct. The flows should now be balanced. The actual airflow can be determined from the gauge/meter reading. The value read on the gauge is called the velocity pressure and on the flow meter is called the air velocity (FPM). The Pitot tube comes with a chart that will give the air flow velocity based on the velocity pressure indicated by the gauge.

**Pitot Tube and Gauge**



**Note**

Place the magnehelic gauge on a level surface and adjust it to zero.

This velocity will be in either feet per minute or meters per second. To determine the actual airflow, the velocity is measured by the cross sectional area of the duct being measured.

## 5.3 Airflow Balancing in Duct

### Note (Option 2):

For balancing, the extension box cover plate is provided with 3 holes on the supply side and 3 holes on the exhaust side.

Do not use the Pitot tube to open holes in the insulation as it may block/damage the Pitot tube.

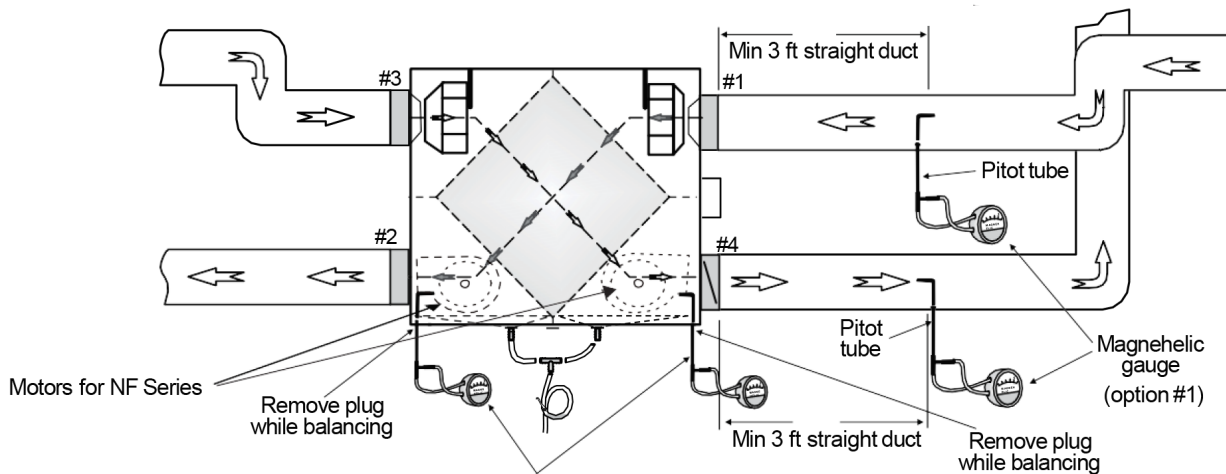
Take 3 readings on each hole and average all 9 readings for supply and same for exhaust.

After balancing is finished, plug all six holes with the plastic plugs provided with the unit.

| Duct Diam. | Cross Sect. Area |
|------------|------------------|
| 5"         | 0.136 sq. ft.    |
| 6"         | 0.196 sq. ft.    |

$\Delta P$ " = Velocity Pressure in inches

| $\Delta P$ " |       | CFM |
|--------------|-------|-----|
| Ø5"          | Ø6"   |     |
| 0.010        | 0.004 | 50  |
| 0.012        | 0.006 | 60  |
| 0.016        | 0.008 | 70  |
| 0.022        | 0.010 | 80  |
| 0.027        | 0.013 | 90  |
| 0.034        | 0.016 | 100 |
| 0.041        | 0.020 | 110 |
| 0.048        | 0.023 | 120 |
| 0.057        | 0.027 | 130 |



$$\text{CFM} = \text{Opening} / \text{Cross-Sectional Area (sq.ft.)} \times \text{velocity (FPM)}$$

### Notes:

To take more accurate readings, use option #1 if possible.

The accuracy of the flow reading will be affected by how close to any elbows or bends the readings are taken. Accuracy can be increased by taking an average of multiple readings as outlined in section 5.2.

## 6.0 Maintenance

### 6.1 Regular Maintenance

1. Turn off the unit and disconnect the power supply.
2. Unlatch the door and lift the door panel towards you, hold it firmly and slide it to the left.
3. Clean the inside of the door and drain pan with a damp cloth to remove dirt and debris that may be present.
4. Clean the filters (twice a year)
  - a. Remove the filters, b. Vacuum to remove most of the dust, c. Wash with a mixture of warm water and mild soap. Rinse thoroughly and shake filters to remove water and let dry.
5. Oil/grease defrost damper lever and hinges.
6. Check the airflow sensors twice a year for lint/duct accumulation. If necessary, clean the sensors with a lint-free cloth. Take extra care while handling. Ensure the sensor goes back to the supply diffuser and the exhaust sensor goes back to the exhaust diffuser on the same original position.
7. Check the exterior fresh air supply hood:
 

Make sure there are no leaves, twigs, grass, ice or snow that could be drawn into the vent. **Partial blocking of this air vent could cause the unit to malfunction.**
8. Reassemble the components, filters and door (the door is secured when you hear a click).
9. Reconnect the power and turn on the unit.



#### Attention

**Do not use a cleaning solution for the ERV core**

**Do not use a pressure washer on the ERV core**

**Do not place the ERV core in the dishwasher**

**Do not use bleach or chlorine**

### 6.2 Annual Maintenance

Repeat steps 1-5 from section 6.1 and continue with the following steps:

1. **Clean the ERV Core:** Remove the filters, loosen the core locking bracket, remove the core by carefully gripping the ends of the core and pull evenly outward.

#### ERV Core

Remove any dust using a vacuum cleaner or rinse with cold water. Soak and rinse the ERV core in warm soapy water.

2. **Motors:** Maintenance free and permanently lubricated.
3. **Drain Tube and Drain Pipe:** Inspect the drain pipe, drain tube and "P" trap for blockage, mold or kinks. Flush with warm soapy water and replace if worn, bent or unable to clean.
4. **Clean Ductwork if Required:** Wipe and vacuum the duct once every year. The ductwork running to and from the ERV may accumulate dirt. You may wish to contact a heating/ventilation company to do this.
5. **Cleaning the Fans:** Fans may accumulate dirt causing an imbalance and/or excessive vibration on the ERV. A reduction in airflow may also occur. In new construction, this may result within the first year due to heavy dust and may occur periodically after that over time depending on the outdoor conditions.
  - a. Open the service door, b. Remove the core, c. Disconnect the fan motor wires, d. Pull the fan assembly out of unit, e. Check for any accumulation on the blades, f. Clean with a small brush if necessary: scrub individual fan blades until clean, vacuum and wipe, g. Put the components back in place, h. Reconnect the power supply and turn the unit back on



#### Attention

**Electrical shock hazard. Can cause injury or death. Before attempting to perform and service or maintenance, always disconnect the unit from its power source.**

## 7.0 Troubleshooting

| Problems   | Possible Causes   | Solution   |
|--|---|--|
| 1. Airflow is too low  | ERV airflow is improperly balanced (for units without built-in Automatic Electronic Air Balancing)<br>Filter clogged<br>Core Obstructed<br>Exterior fresh air supply blocked<br>Ductwork is restricted<br>Power supply is low (low voltage) | Have professional balancer or contractor balance the unit<br>Remove and clean filter<br>Remove and clean core<br>Remove and clean the blockage<br>Inspect the duct installation<br>Switch off the unit immediately and call the electrician to check the voltage |
| 2. Senses cold air from supply   | Exhaust hood outside the house is blocked<br>ERV airflow improperly balanced (for units without built-in Automatic Electronic Air-Balancing)<br>Outdoor temperature is extremely cold   | Remove the blockage and clean the hood<br>Have professional balancer or have a contractor balance the unit<br>Placement of furniture or closed door is restricting the movement of air in the home<br>Install a duct heater                                      |
| 3. Water in the bottom of the ERV  | Drain pans, drain tube, drain pipe and "P" trap are clogged   | Check for blockage and for kinks in line<br>Check connections<br>Make sure water drains properly   |
| 4. Time switch 20 / 40 / 60 minute / Intermittent Switch light doesn't stay on   | Loose connection<br>The switch may be defective<br>Turn off the ERV breaker   | Check connection<br>Replace the timer switch<br>Reset the main controller  |
| 5. Unit is not defrosting properly   | Fresh air duct may be frozen<br>ERV airflow is improperly balanced<br>Temp. sensor may be defective   | Check and remove ice<br>Have a professional balancer or contractor balance the unit<br>Replace the temperature sensor  |
| 6. All 3 LEDs of timer switch blink  | Control board reports error<br>Lost communication with control board  | Refer to problem 4.<br>Check all wire connections on timer switch and main control board   |
| 7. LEDs on the Main Control Board and the remote all mount Timer Switch flashes 0.5 seconds On, 2 seconds Off, then repeats the cycle  | Exhaust fan open circuit<br>a. Motor burned<br>b. Fan overheated  | Replace the motor<br>Call a technician (if possible, replace the fan)  |
| 8. LEDs on the Main Control Board and the remote wall mount Timer Switch flashes 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, then 2 seconds Off, then repeats the cycle                               | Damper obstructed<br>Exhaust fan jam/over-current   | Check backdraft damper, no screw must interfere with the function of the damper<br>Replace the fan   |
| 9. LEDs on the Main Control Board and the remote wall mount Timer Switch flashes 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, 2 seconds Off, then repeats the cycle | Supply fan open circuit<br>a. Motor burned<br>b. Fan overheated   | Replace the motor<br>Call a technician (if possible, replace the fan)  |

|  |   |   |
|--|---|---|
| <p>10. LEDs on the Main Control Board and the remote wall Timer Switch flashes<br/>0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On, 2 seconds Off, then<br/>repeats the cycle</p>  | <p>Damper obstructed<br/>Supply fan jam</p> | <p>Check back-draft damper, no screw must<br/>interfere with the function of the damper<br/>Replace the fan</p> |
| <p>11. LEDs on the Main Control Board and the remote wall mount Timer Switch<br/>flashes: 0.5 seconds On / 0.5 seconds<br/>Off / 0.5 seconds On / 0.5 seconds Off<br/>/ 0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On / 0.5 seconds Off /<br/>0.5 seconds On, 2 seconds Off, then<br/>repeats the cycle</p> |   | <p>Replace the temperature sensor</p>   |